

1. Overview

This specification covers the following topics:

- Ad Types
- Ad Features (page 7)
- Ad Buy Dimensions (page 9)
- Ad Inventory/Memory Usage (page 11)
- Ad Screens (page 12)
- Ad Feature Summary (page 14)
- Ad Buy Dimensions Summary (page 14)

2. Ad Types (Spaces)

Topics covered are

- Panel Ads
- Channel Ads (page 4)
- Default Ads (page 6)
- Bonus Ads (page 6)

2.1 Panel Ads

Panel ads occupy a fixed area in the Guide and are generally filled with paid advertisements. When a given ad space is not sold, the space will be filled in one of the following ways:

- Upon initial setup and before any ads are received, or after a loss of data, a Placeholder ad, stored in ROM, is inserted in the available space (see section 2.3).

NOTE: *The Placeholder ads must be "timeless", as they will be displayed on initial setup (sometimes TVs may have been on store shelves for many months) and after power outages (which may occur years after first setup) until the next download is received.*

- After ads are received, an ad from a paying advertiser is displayed at no additional cost (bonus ad circulation, see section 2.4).

NOTE: *The bonus circulation ads will be scheduled and inserted via IB in the same way as any paid ad. There are no special firmware requirements for bonus ad support.*

Panel ads will be the largest ads. Located directly below the PIP, there is space available in the Guide for two Panel ads. Each Panel ad occupies approximately 1/9th of the total screen area. As shown in Figure 1, the usable Panel ad area is 132 pixels high by 160 pixels wide, with 2 pixel wide black borders all around and 2 pixels of gray on the left and right sides and between the two ad spaces.

As shown in Figure 1, an advertiser may purchase both 1/9th screen areas, thus creating a single ad with a usable space of 270 pixels high by 160 pixels wide, with 2 pixel wide black border all around and 2 pixels wide of gray on the left and right sides.

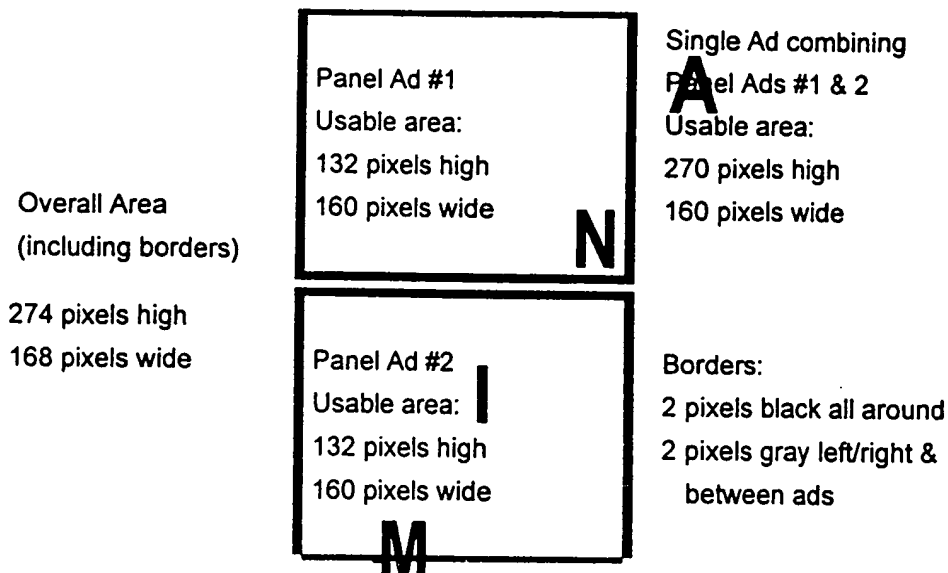


Figure 1. Panel Ad Dimensions

All Guide screens are made up of "hard pages." A hard page is defined as an area comprising 9 channel slots. Each time a user scrolls below the 9*x channel slot, a new hard page appears; scrolling up from the new hard page displays the previous hard page. Each hard page may have different Panel ads associated with it.

Note: Hard pages are defined differently in the Sort screens. Each sort category (for example, Movies, Sports, Children) will be considered one hard page regardless of the number of items in the list vertically. However, as the user moves horizontally from one category to the next, the Panel ads may change.

The number of hard pages available depends on the size of the user's lineup and the number of channels turned On or Off. In the event that there are not enough channels to support the number of hard pages required for the number of Panel ads sold, not all Panel ads will be displayed.

For example:

Assume we have sold 4 pairs of Panel ads and 4 Channel ads. Additionally, assume the user has 20 active channels in their channel lineup. The ads would be displayed as follows

- Panel ad Pair 1 with channels 1-8 and the first Channel ad
- Panel ad Pair 2 with channels 9-16 and the second Channel ad

- Panel ad Pair 3 with channels 17-20 and the third and fourth Channel ads

If the user turned On more channels, thus requiring the addition of a fourth hard page, the fourth Panel ad Pair would become visible.

When a user highlights an ad, an expanded information box automatically displays. This expanded information box covers two thirds of the right-hand side of the Grid. The user closes the expanded information box either by moving the highlight off the Panel ad or by pressing the information button after the last related information box screen has been presented.

There can be multiple information screens displayed sequentially in the expanded information box. Pressing the information button while an ad is highlighted accesses these additional screens. There is no limit to the number of additional screens, other than memory limitations and selling requirements.

Normally, Panel ads are surrounded by black borders. When a panel ad is highlighted, the border turns yellow. When a program is set to record the border turns red (dark red when the Panel ad is not highlighted, light/bright red when highlighted). When a program is scheduled to watch, the border turns orange (dark orange when the Panel ad is not highlighted, light/bright orange when highlighted).

If a Panel ad is highlighted, has show information associated with it, and the advertised show is currently On, the user may tune directly to that program by pressing the Left Action button (the Blue button labeled "Watch") or by pressing the Enter/Select button on the remote. Pressing the Watch button also places the show in the Record/Watch Schedule; this allows the user to set the frequency to daily or weekly. If the show is not currently On, pressing the Left Action button places the show in the Record/Watch Schedule; pressing the Enter/Select button tunes to the channel related to the show in the ad. Shows added to the Record/Watch Schedule may be set to be viewed once, daily, or weekly.

Note: The Watch feature and related Action button labels operate in the same way as if scheduling a show to Watch from the Grid.

If a Panel ad has show information associated with it, the show may be recorded by highlighting the ad and pressing the Right Action button (the Green button labeled "Record"). If the show is currently On, recording begins immediately and the show is placed in the Record/Watch Schedule; this allows the user to set the frequency to daily or weekly. If the show is On in the future, that show is added to the Record/Watch Schedule for auto-recording. Shows added to the Record/Watch Schedule may be set to be recorded once, daily, or weekly.

Note: The Record feature and related Action button labels operate in the same way as if scheduling a show to Record from the Grid.

Panel ads can be dynamic. That is, the Panel ad area may change every x seconds rotating through n different graphical or textual ad executions (depending on available space) in the Panel ad space. When a Panel ad is highlighted, the ad rotation continues.

2.2 Channel Ads

Unlike Panel ads, Channel ads do not occupy a fixed area. Channel ads are essentially inserted between channels in the Grid, but a Channel ad cannot be dynamic (like Panel ads). If there are no Channel ads sold, the Grid will be a continuous list of channels/show tiles with no gaps. As these channel ads take up a channel slot in the Grid, it is desirable to limit how many are likely to appear on any one screen to ensure the Guide remains a useful source of TV programming information. (This limit should be approximately one Channel ad per hard page; this is a scheduling issue, not a firmware issue.)

A Channel ad is the height of a channel slot, the width of the grid, and is intermingled with the channel listings. The usable area for a Channel ad is 24 pixels high by 344 pixels wide, with 2 pixel wide bevels all around.

There are three types of Channel ads:

- **Relative (also called "every n ads")**

Relative Channel ads appear in a position relative to the top of the Grid and are spaced every n channel slots. These ads appear and disappear as the user moves through the hard pages. It is anticipated that n will usually (but not necessarily always) equal 9, since this is the number of channels in the PIP version Grid. This would provide for one ad per hard page. A location for the first ad can be selected on the first page and subsequent ads will follow every n channel slots. The same ad is repeated every n th slot. This method of repeating every n th channel slot is true for both PIP and non-PIP versions (this allows equivalent selling of inventory).

Note As a user turns channels Off, the spacing of these ads remains constant (that is, every n channel slots). In the event that there are not enough channels to continue this spacing, ads will appear at the end of the Grid listings.

- **Parent**

Parent Channel ads are linked to a specific channel located directly above the ad. A Parent Channel ad is attached to its adjacent "parent" channel (that is, the ad follows the parent channel).

if the parent channel is turned Off, the ad will be displayed at the bottom of the Grid.

- **Fixed position**

Fixed Position Channel ads are located in one specific location, y channels down from the top of the Grid. If y is greater than the number of channels in the Grid, the ad will appear at the end of the Grid listings.

Except as noted above regarding Parent and Fixed Position Channel ads, Channel ads will be spaced such that no more than one Channel ad is displayed at one time.

Vertically, these ads follow the channel listing information. These ads remain in a fixed position when the Grid is scrolled horizontally. The user can highlight these Channel ads like as a show title. When highlighted, these Channel ads display additional information in the information box like a channel.

Unlike Panel ads, Channel ads are surrounded by bevels just like a show tile. However, Channel ad highlighting is similar to Panel ad highlighting. When a user highlights a Channel ad, the bevels change to a flat (non-beveled) yellow border. When a Channel ad show is set to record the border turns red (dark red when not highlighted, light/bright red when highlighted). When a Channel ad show is scheduled to watch,

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Channel ads can have multiple, sequential information screens. The availability of this additional information is indicated by the "i" icon and is accessed by pressing the information button.

If a Channel ad is highlighted, has show information associated with it, and the advertised show is currently On, the user may tune directly to the related program either by pressing the Left Action button (the Blue button labeled "Watch") or by pressing the Enter/Select button on the remote. Pressing the Watch button also places the show in the Record/Watch Schedule. If the show is not currently On, pressing the Left Action button places the show in the Record/Watch Schedule for future auto-viewing; pressing the Enter/Select button tunes to the channel related to the show in the Channel ad. Shows added to the Record/Watch Schedule may be set to be viewed once, daily, or weekly.

Note: The Watch feature and related Action button labels operate in the same way as if scheduling a show to Watch from the Grid.

If a Channel ad has show information associated with it, the show may be recorded by highlighting the ad and pressing the Right Action button (the Green button, labeled Record). If the show is On now, recording begins immediately, and the show is placed in the Record/Watch Schedule. If the show is On in the future, it is added to the Record/Watch Schedule for recording. Shows added to the Record/Watch Schedule may be set for recording once, daily, or weekly.

Note: The Record feature and related Action button labels operate in the same way as if Recording a show from the Grid.

2.3 Default Ads

When the Guide is first setup, the initial download of information will not have been received. The Panel ad spaces must be filled with Default ads that are stored in ROM. These ads must be "timeless", as they will appear each time a TV is set up, either for the first time or after a power outage. Channel ads do not require default ads. The Default panel Ads are defined as follows:

- Default Panel Ad 1 will include a review of the Guide features
- Default Panel Ad 2 will provide an overview of how to use the Guide

2.4 Bonus Ads

In the event that a Panel ad space is not sold, an ad from a paying advertiser will be inserted at no charge to the advertiser, as bonus circulation. These bonus ads will be allocated/scheduled according to our business needs. The bonus circulation ads will be inserted via IB in the same as any paid ad. There are no firmware requirements to support bonus ads differently than any other Panel ad.

3. Ad Features

Topics covered are

- Ad Content
- Background Colors (page 8)
- Interactive with TV (page 8)
- Interactive Information/Multiple Levels (page 9)
- Dynamic Ad Blocks (page 9)

3.1 Ad Content

Ads may be made up of a graphics field, a text field, or a combination of a graphics and text field.

Graphics may be presented in

- 8 bit/pixel (using "320 mode")
- 4 bit/pixel (in "640 mode")
- 1 bit/pixel images

Due to memory limitations, Panel ads

- cannot contain graphics larger than 25% of the ad area when 4 or 8 bit/pixel graphics are used (see the 60 Minutes Ad, in section 6.4)
- can use 100% of the area for a 1 bit/pixel graphic (see the Home Improvement Ad screen in section 6.3)
- are limited to the channel logo portion of the ad for Channel ad graphics; the remaining portion of the Channel ad will be text only (see the MTV ad, in section 6.1)

Displayed text can have the following characteristics:

- available normal and condensed 18- and 24-point fonts
- oblique version of the font
- underlining
- bold
- centering
- left and right justification
- color can be selected once per line

Text could also be displayed as a 1 bit/pixel bitmap in the Panel ad areas only.

3.2 Background Colors

Background colors will have an impact on the overall look and usability of the Guide.

Panel ad background colors may be selected by the advertiser but will be subject to luminance constraints described in this section.

Channel ad background colors may be restricted. This is a scheduling/creative issue, not a firmware issue. Show tile background colors are used as keys for show categories (movies, sports, etc.) and actions taken on a show (set to record or watch). While most any background color could be displayed, it is desirable to maintain the integrity of the show tile color schemes. Therefore, it is likely that a list prohibiting the use of specific background colors or a set of colors will be created and given to advertising agencies for their use when developing Channel ad creative. Channel ad backgrounds will be subject to luminance constraints described in this section.

The Info. box background will be gray and can not be changed by the advertiser.

There are limitations on the luminance of the colors in the ads. If the luminance is set too high, the screen image will blister.

3.3 Interactive with TV

3.3.1 Tune-in Ads

Tune-in ads allow the user to tune directly to a show in progress from a highlighted ad block as long as the ad block has program information associated with it. An show in progress associated with an ad is directly tuned by either pressing the Enter/Select button or the Left Action button (the Blue button labeled "Watch").

3.3.2 Direct-record Ads

Direct-record ads allow the user to record a show in progress or scheduled for a later time from a highlighted ad block. There is no defined limit on how far into the future a direct-record associated show may be scheduled to air. A show associated with an ad is recorded by pressing the Right Action button while the ad is highlighted. The user may select a record frequency of once, daily, or weekly. From an ad, the user presses the Right Action button (the Green button labeled "Record") to place the show in the Record Schedule. In the event that the show is currently On, pressing the Right Action button while highlighting an ad allows recording of the show in progress. The show title is also placed in the Record Schedule in the event the user wishes to modify the record frequency to daily or weekly.

3.3.3 Watch Ads

A program advertised in any ad space may be placed into the Watch Schedule as long as the ad block has program information associated with it. There is no defined limit on how far into the future an associated show may be scheduled to air. The Watch feature operates in much the same way as the Record feature, except that it tunes the TV to the show rather than recording it. If a user is watching TV, the channel automatically changes to the show in the Watch Schedule when the show begins. If the TV is turned Off when a show in the Watch Schedule is scheduled to begin, the TV is turned On and tuned to the desired channel (TV implementations only, not VCR.) The user may select a watch frequency of once, daily, or weekly. From an ad, the user presses the Left Action button (the Blue button labeled "Watch") to place the show in the Watch Schedule. In the event that the show is currently On, pressing the Left Action button while highlighting an ad results in tuning directly to the show. The show title is also placed in the Watch Schedule in the event the user wishes to modify the watch frequency to daily or weekly.

3.4 Interactive Information/Multiple Levels

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Ads may have multiple levels of information:

- First Level Information is the ad copy and/or graphics that are presented on screen with no user action. This comprises the Panel and Channel ad areas.
- Second Level Information (if provided by the advertiser) automatically becomes visible ("Auto-Open") when the user highlights an ad block by scrolling onto it. This secondary information is presented in the information box when a Channel ad is selected. When a Panel ad is highlighted, an expanded version of the information box covers the entire channel grid area. The "i" icon on the ad, placed at the advertiser's discretion, indicates there is more information available for that ad. The second level information may be text and/or graphics depending on memory availability.

Note: Channel logos at 1X or 2X are the only graphics likely to be supported in GUIDE 98 due to memory limitations.

- Third Level Information (if provided by the advertiser) availability is indicated by the info. button "i" on a Second Level information screen. For Channel ads, pressing the information button causes the information box to expand and cover the entire grid area. This information can be multiple pages long. Pressing the information button successive times cycles the user through the pages. Pressing the information button from the last available screen causes the information box to return to its original size for all ads. The third level information may be text and/or graphics depending upon memory capabilities.

Note: Channel logos at 1X or 2X are the only graphics likely to be supported in GUIDE 98 due to memory limitations.

3.5 Dynamic Ad Blocks

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Memory permitting, the Panel ad graphics or text may change every x seconds and rotate through n different graphical or textual executions. There should be the capability to limit the number of dynamic ads displayed at any one time. The limit should be one per screen. This is a scheduling issue only.

4. Ad Buy Dimensions

Ad revenue ultimately will be driven by the number of ad impressions generated. Additionally, there are several variables which may increase the effectiveness of an impression and therefore add incremental revenue beyond a simple impression fee.

Topics covered are

- Ad Types (page 10)
- Ad Content/Memory (page 10)
- Interactivity with TV (page 10)
- Duration (page 10)
- Rotation (page 10)
- Guide Section Location (page 10)
- Ad Page Priority (page 10)
- Dynamics (page 11)

Note: Some of the sections that follow may be mutually exclusive.

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4.1 Ad Types

There are two basic ad types:

- Panel ads
- Channel ads

It is anticipated that Panel ads will command the higher price.

4.2 Ad Content/Memory

Depending upon memory limitations (and it is expected to be scarce), it may be appropriate to charge more per byte as ad memory use increases. Graphics create much higher memory demands than text. Dynamic graphics ads require dramatically more memory than dynamic text ads, etc.

Ads may have multiple levels of information (as described in section 3.4). Rates could vary depending upon the number of levels of information.

4.3 Interactivity with TV

Ads that are interactive with the TV, allowing tune-in, direct-recording, or watch schedule capabilities could be priced at a premium compared to non-interactive ads.

4.4 Duration (start time/end time)

Ads are purchased for display with a given start time and a related end time. The difference between the start time and end time is the ad's duration. The minimum duration increment is 60 seconds. The longer the duration, the greater the ad rate, although cost/second may decrease based on an increase in duration. An ad will not be replaced automatically when its end time is reached. Ads will only change when a user action causes a new hard page or causes a new section of the Guide to appear (for example, going from the Grid screen to the Sort screen).

4.5 Rotation

Ads can rotate. For example, different ads can appear each time the user enters the same page/section of the Guide. There is no defined limit on the number of ads placed in rotation. Ads will be assigned a priority with the ad of the highest priority being displayed the first time a hard page or section is accessed. Then the second priority ad is displayed the next time the user views this page and so forth. The priority counter is page dependent, meaning that if the user views the first page for a third time, they will see the third priority ad on that page, and if they then scroll to the second page for the first time, they will see the first priority ad on the second page.

4.6 Guide Section Location

Ads may differ by the section of the Guide the user is viewing. For example, if a user is viewing the Sports theme area, an ad for ESPN Sports Center may appear, whereas a different ad was presented when the user was on the main Grid.

4.7 Ad Page Priority

Every 9 panel slots constitutes a hard page. Each hard page may have different Panel ads.

4.8 Dynamics

There are two different types of dynamic ads:

- **Graphic Dynamics Ads**

Graphically dynamic ads present different graphics every x seconds (with x as small as 1.0 second) rotating through n graphical executions. These ads are relative memory intensive. An additional charge (likely more than n times the cost of a single ad) could be collected for a dynamic ad based on the assumption that it will be significantly more effective than a static ad. Only a limited number of these ads could be displayed at any one time (likely a maximum of 1 per screen) as a busy screen will decrease the effectiveness of the ads and the utility of the Guide.

- **Text Dynamic Ads**

A less memory intensive dynamic ad is one with a fixed graphic and a text area using the 18- or 24-point fonts and where only the text area changes every x seconds. The fee for this may be less than a graphically dynamic ad.

5. Ad Inventory / Memory Usage

- It is assumed that 60k is available for storage of ads.
- 60k will support approximately 60 ads of the following mix:
 - ◊ 25 Panel Ads w/ 25% of the area containing a 4 bit/pixel graphic and the rest text
 - ◊ 25 Panel Ads that are all text
 - ◊ 10 Channel Ads

Note: This ad mix uses 54.8k - see Exhibit 1, Ad Memory Analysis - (assumes no dynamic ads).

- Ads must be readily accessible once placed in memory, as advertisers may wish to pull an ad or to correct errors in transmission.

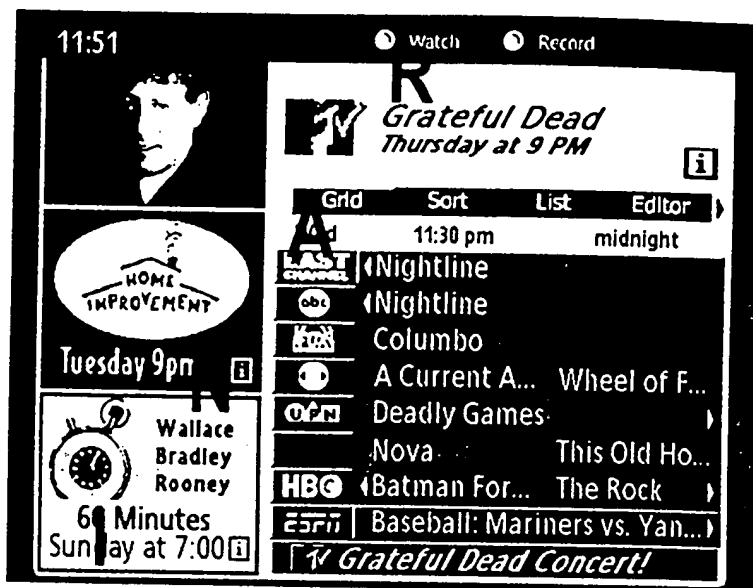
6. Ad Screens

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6.1 Highlight Channel Ad

Moving the highlight to a Channel ad brings up the first level ad information in the info box. If this ad has show related information, the user can:

- Tune to it by pressing the Enter key.
- Record it by pressing the Right (Green) Action button, labeled "Record."
- Schedule it to be watched by pressing the Left (Blue) Action button, labeled "Watch."
- Obtain more information by pressing the **i** key (see the next screen).



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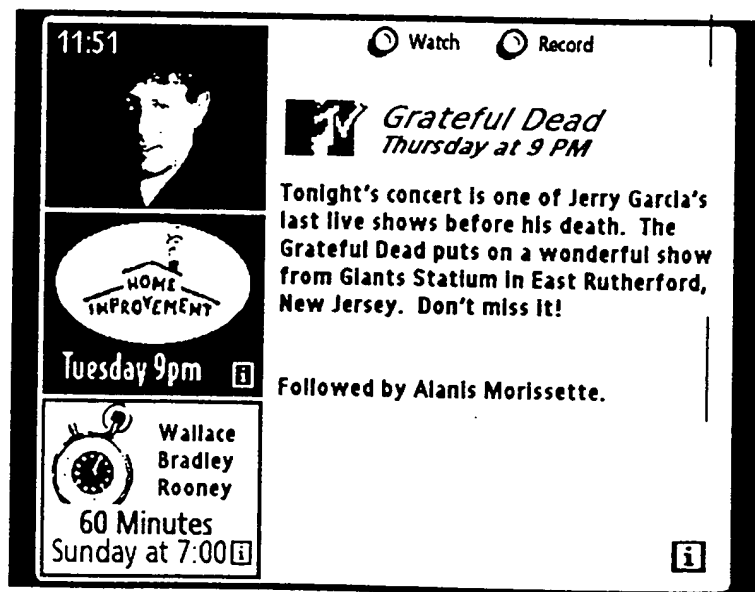
6.2 Expanding a Channel Ad

Pressing the **i** key expands the info box presenting additional Channel ad information, if any exists.

Note: The Watch and Record buttons now share the background color of the ad.

- If additional pages of information exist, they are accessed by pressing the **i** key again.
- Pressing the **F** key on the last info screen available causes the info. Box to return to its original dimensions.

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6.3 Highlighting Panel Ad #1

Highlighting a Panel ad automatically expands the information box.

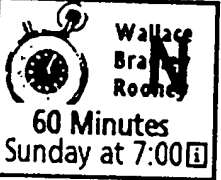
- If additional pages of ad information exist, they are obtained by pressing the **i** key again.
- Pressing the **i** key on the last info screen available causes the info. box to return to its original dimensions.
- Pressing the right directional arrow closes the ad and moves the highlight to the last highlighted channel in the channel column.
- Pressing the down directional arrow moves the highlight to Panel ad #2.

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11:51
Ⓢ Watch Ⓢ Record

Tuesday 9pm **i**



Wallace
Bradley
Rooney

60 Minutes
Sunday at 7:00 **i**

abc Season Premier!
Resday at 9 PM

Tim Allen continues to bring his unique slant on masculinity to his role as father, husband, and host of "Tool Time." Although he is beginning to feel the pangs of a mid-life crisis coming on, he is still convinced that "MORE POWER" is the ideal solution to most of life's challenges. Nowhere is this challenge more evident than in the Taylor household, where adolescence is in full throttle.

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6.4 Highlighting Panel Ad #2

Scrolling down from Panel Ad #1 highlights Panel Ad #2 and automatically expands the information box.

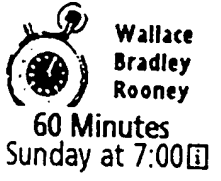
- If further additional pages of ad information exist, they are obtained by pressing the **i** key again.
- Pressing the **i** key on the last info screen available causes the info. box to return to its original dimensions.
- Moving to the right closes the ad and moves the highlight to the last highlighted channel in the channel column.
- Pressing the up directional arrow moves the highlight to Panel ad #1.

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11:51
Ⓢ Watch Ⓢ Record

Tuesday 9pm **i**



Wallace
Bradley
Rooney

60 Minutes
Sunday at 7:00 **i**

Season Premier!
Sunday at 7:00

Last season, 60 Minutes achieved an unprecedented 20th year as a Top 10 ratings performer. Its 63 Emmys are the most ever won by a news program. This year, the broadcast, in its 30th season on the CBS Television Network, continues with its trademark blend of investigative reports, interviews and profiles.

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7. Ad Feature Summary

Features Supported	Panel	Channel
Graphics	X	X
Text	X	R
Can be Highlighted	X	X
Direct-tune	X	X
Direct Record	X	X
Watch Schedule	X	X
Standard Info. Box with Info.	--	X
Auto-Expanded Info. Box	X	--
Additional Info. Screens	N	X
Dynamic Graphics	X	X
Dynamic Text	X	X
Related to a page	X	--
Every Nth Channel	--	X
Related to a Parent Channel	--	X
Fixed Channel Location	--	X

8. Ad Buy Dimensions Summary

Dimension for Price Differentiation	Panel	Channel
Type of Ad	X	X
Levels of information	X	X
Memory Use	X	X
Direct-tune	X	X
Direct-record	X	X
Watch Schedule	X	X
Duration	X	X
Day Part	X	X
Guide Section Location	X	X
Guide Page Location	X	--
Dynamic - Graphics	X	X
Dynamic - Text	X	X
Every Nth Channel	--	X
Related to a Parent Channel	--	X

Fixed Channel Location

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10. EXHIBIT 1. Ad Memory Analysis

EXHIBIT 1

Rad Memory Analysis

4 bits/pixel graphics assumed

Screen Width	528	Screen Height	416
Panel Width	168	Panel Height	136
Total Border Width	2	Total Border Height	2

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Assumed
Compression
50%

Assumed
Memory
60

Usable Dimensions (ad area w/o bevels/borders)				Type of Ad	Characters / page	Bits/ pixel or character	Rqd per ad Uncompressed memory	Rqd per ad Compressed memory	Total Ad Capacity per type	Qtr Graphics, for Each Ad	Memory per Ad Type	Target # of Ads per type	Memory per Ad Type	
Panel Ads	Ad Width	168	Ad Height	132	Panel Ad with Qtr Graphics and text	Graphic	4	11.1	5.5	10.8	43.3	1.4	25	34.7
						Text	1	0.6	0.32	187.5		0.3		8.0
					Text Only Panel Ad	Text	1	0.6	0.32	187.5		0.3	25	8.0
Channel Ads														
	Logo Area Width	62	Logo Height	24	Channel Ad	Graphic	4	0.7	0.37	161.3		0.4	10	4
	Text Area Width	286	Channel Height	24		Text	1	0.03	0.02	3871.0		0.02		0.2
Total Ads												60	54.8	